

REBUTTAL TESTIMONY
OF
WILLIAM H. ATWOOD JR., P.E.
WATER ENGINEER
WATER ENGINEERING PROGRAM
SAFETY & RELIABILITY DIVISION
ILLINOIS COMMERCE COMMISSION

AQUA ILLINOIS, INC.

**PETITION FOR A CERTIFICATE OF PUBLIC CONVENIENCE
AND NECESSITY TO CONSTRUCT, OPERATE AND MAINTAIN A
WATER DISTRIBUTION SYSTEM AND A WASTEWATER
COLLECTION SYSTEM IN AREAS OF KANKAKEE AND WILL
COUNTIES, ILLINOIS.**

DOCKET NO. 13-0246

JANUARY 3, 2014

WITNESS IDENTIFICATION

Q. Please state your name, your employer, and your business address.

A. My name is William H. Atwood Jr. I am employed by the Illinois Commerce Commission ("ICC" or "Commission"). My business address is 527 East Capitol Avenue, Springfield, Illinois 62701.

Q. Are you the same William H. Atwood Jr. who submitted direct testimony in this docket, which was identified as ICC Staff Exhibit 1.0?

A. Yes, I am.

INTRODUCTION

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my testimony is to respond to the rebuttal testimony of Aqua Illinois, Inc.'s ("Aqua" or the "Company") Craig L. Blanchette in regards to certain issues related to issuing the Company a Certificate of Public Convenience and Necessity ("Certificate") pursuant to Section 8-406(b) of the Illinois Public Utilities Act ("Act"), including, but not necessarily limited to, the proposed certificated service area and least-cost analysis.

REVISED WATER SERVICE AREA

Q. Mr. Blanchette takes issue with your testimony regarding Commission policy on granting Certificated Service Areas based upon proof of need, such as actual applications for service and/or any identified and known future changes such as planned subdivisions and commercial/industrial

24 **developments. (Aqua Ex. 2.0 at 21:426-438.) Has your opinion changed**
25 **regarding this issue?**

26 A. No. Mr. Blanchette appears to base his disagreement strictly upon Section 8-
27 406(b) of the Act. My direct testimony referenced Commission policy, not the
28 Act. (Staff Ex. 1.0 at 16-17:367-380.) I further made clear in my Response to
29 Company Data Request ("DR") AQUA-ICC 1.01 that the majority of docketed
30 cases involving requests for Certificates for new or expanded water service areas
31 evaluate need for water service as described in my direct testimony and that all
32 Certificate orders for these certain cases support this. A true and correct copy of
33 this Response is attached hereto as Staff Ex. 4.01.

34
35 **Q. Aqua has revised the Water Area for which it seeks a Certificate so that the**
36 **area now excludes the current water service areas within the incorporated**
37 **areas of the Village of Monee ("Monee") and the Village of Peotone**
38 **("Peotone"). (Aqua Ex. 2.1.) Does the revised Water Area adequately**
39 **address your objection to including these areas as originally proposed?**

40 A. Yes.

41
42 **Q. Aqua removed Monee's and Peotone's incorporated areas, although Mr.**
43 **Blanchette did not agree that your objection was valid. (Aqua Ex. 2.0 at**
44 **22:448-462.) Do you still believe your objection is valid? Please explain.**

45 A. Yes. Having more than one water system in the same area unnecessarily
46 increases congestion of underground utilities which increases the difficulty of

design and construction. Duplicate systems also unnecessarily complicate operation, maintenance and repair of the water systems, due to the increased possibility of utility personnel misidentifying various mains of the systems.

In addition, a new water system proposed by a private utility within an area that already has water service almost certainly does not meet the certification requirements of necessity and least-cost found in 220 ILCS 5/8-406(b)(1).

Q. The revised Water Area now proposes certification of only a corridor that extends roughly one mile on either side of County Highway 10/Will Center Road in Will County as it runs between Aqua's current Kankakee and University Park Division Certificated Service Areas. (Aqua Ex. 2.1.) Do you have any objections?

A. Although I would prefer that the Company had progressed further along with the design stage and was certain of the location of the final route, I have no objection.

LEAST-COST

Q In your Direct Testimony you mentioned several reasons explaining why Aqua had not provided sufficient clarity or evidence for you to offer an opinion whether its proposed solution is least-cost. Please explain.

A. Aqua defined its recommended solution vaguely as a pipeline from the Kankakee Division facilities at the Manteno Diversatech Campus to the University Park

70 Division facilities at Central Avenue. (Aqua Ex. 1.4 at 46-47.) Aqua did not
71 specify the design flow rate nor did it commit to a pipeline route and size. Also,
72 Aqua had not adequately addressed whether the Kankakee Water Treatment
73 Plant ("Kankakee WTP") and booster pump stations at the Manteno Diversatech
74 site would need to be upgraded. (Staff Ex. 1.0 at 19-21:438-494.)
75

76 **Q. What solutions is Aqua currently considering to determine the least-cost**
77 **means of satisfying the water service needs of its University Park Division**
78 **customers?**

79 A. In his Rebuttal Testimony, Mr. Blanchette presents three alternatives for
80 addressing the water service needs of its University Park Division customers.
81 These include a 24-inch pipeline using Route 5A, a 24-inch pipeline using Route
82 5, and expansion and treatment of University Park's current groundwater supply.
83 (Aqua Ex. 2.0 at 12-13:240-260.) Route 5 and Route 5A were previously
84 described and depicted in Aqua's Water Supply Study for Aqua Illinois System at
85 University Park, IL, dated March 18, 2013. ("Supply Study"; Aqua Ex. 1.4)
86 Pipeline options for Routes 1 through 5 begin at a 3 Million Gallon ("MG") water
87 storage tank at the Diversatech site near Manteno. The Route 5A Pipeline option
88 connects to an existing 20-inch water main to the Village of Grant Park. This 20-
89 inch main is also supplied water from the 3 MG tank. Two booster pump stations
90 at the site supply water from the 3 MG tank to the Village of Manteno ("Manteno")
91 and the Village of Grant Park ("Grant Park"). Aqua intends to serve University

Park and Grant Park using Booster Pump Station No. 2. (Aqua Ex. 1.4 at 33 and 39-40, and Figure 9.)

The expanded well supply and treatment at University Park is described in Aqua's Water Treatment Study for Aqua Illinois System at University Park, IL, dated July 19, 2013. ("Treatment Study"; Aqua Response to Peotone DR VOP(INT)-AQUA 1.01 - Attachment 2; and Aqua Ex. 2.4.) The Ion Exchange Treatment option features two treatment plants and utilizes all of University Park's existing wells and includes two new wells in order to have a firm water source capacity of 4.8 million gallons per day ("MGD"). (Aqua Ex. 2.4 at 12.)

Q. What are the total project costs associated with the three alternatives and which one has Aqua chosen as the least-cost means of satisfying the water service needs of its University Park Division customers?

A. The total project costs are given in the table below. (Aqua Ex. 2.0 at 13:260.)

	24-inch Pipeline <u>Route 5A</u>	24-inch Pipeline <u>Route 5</u>	Ion Exchange Softening of Well <u>Supply</u>
Total Cost	\$13,015,211	\$16,345,791	\$ 21,400,000

As shown above, the 24-inch pipeline along Route 5A has the lowest estimated total project cost and is Aqua's selected alternative as the least-cost means of providing softened, filtered water to University Park.

Q. Has Aqua addressed your concerns regarding the information needed to determine which alternative is least-cost?

A. Partially. Aqua has chosen a pipeline route and size. Unfortunately, the Company uses different design flow rates for the Route 5A Pipeline and the Ion Exchange Treatment option. This makes direct comparison difficult. No design flow rate was provided for Route 5 Pipeline Option, presumably since it is longer and more expensive than the Route 5A Pipeline.

Q. Please explain how you believe a direct comparison should be performed.

A. Aqua has presented the need for the proposed pipeline based upon a need to supply existing and future customers in the University Park Water Division with high quality, softened drinking water. (Aqua Ex. 1.0 at 6:133-136.) Typically, to arrive at a proposed solution, the Company would select a design year and a design maximum day flow rate based on analysis of several years of water demand data and design year demand projections. Design of water source and treatment facilities based on maximum day demand at the design year is prescribed in Part 2.1 of the Recommended Standards for Water Works ("10 State Standards") which is published by the Great Lakes - Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers ("Great Lakes Board"). The Illinois Environmental Protection Agency ("IEPA") is a member of the Great Lakes Board and refers to the 10 State Standards when reviewing drinking water construction and operating permit applications.

A direct comparison would be possible if all options considered for providing high quality, softened drinking water were based on the same design maximum day flow rate which is calculated as described above. In addition, any water supply source, transportation and treatment components necessary for the proposed options to adequately provide the design maximum day flow rate should be included in order to perform a direct comparison.

Q. Please discuss the design flow rates of the Route 5A Pipeline and the Ion Exchange Treatment options.

A. Aqua has provided a firm treated water design flow rate of 4.8 MGD for the Ion Exchange Treatment option. (Aqua Ex. 2.4 at 12.) It is based on the sum of University Park's 2008 peak demand day of 3.684 MGD and a contractual requirement to supply 1.152 MGD to the PPL Global Power Plant (Aqua Ex. 2.4 at 7). A future design year was not used for hydraulic design of this option.

Regarding the Route 5A Pipeline, Aqua provides Exhibit 2.3 which is a Hydraulic Water Analysis Report ("Hydraulic Report") that sets forth the results of hydraulic modeling analysis of the Kankakee and University Park water systems. Based on the report results, Aqua states that the Route 5A Pipeline allows it to use existing Diversatech pumping facilities, without any physical improvements, to serve the current average daily demand of University Park of 1.2 MGD and the future average daily demand through 2040. Aqua also states that this option provides 6.5 million gallons of peak day capacity at a velocity of 3

feet per second in the 24-inch water main. (Aqua Ex. 2.0 at 11-12:227-239;
Aqua Ex. 2.3 at 5.)

Q What are the Results and Recommendations of the Hydraulic Report? (Aqua Ex.
2.3)

The Hydraulic Report results regarding the 24-inch Route 5A Pipeline scenario
and the recommendations (which pertain to both the 24-inch and 30-inch pipe
analysis) are reproduced below: (Aqua Ex. 2.3 at 3 and 5.)

Results:

1. With a 24-inch pipeline, the average day demand (ADD) needs are met up to and through Year 2040 with two (2) existing Grant pumps running in parallel. If we replace the Grant pumps to discharge at 250 psig, then we can send 6.5 MGD up the 24" pipeline, with the limiting factors being both the 250 psig discharge pressure and the 20" velocity of 5 fps.
2. With a 24-inch pipeline, the peak day (ADPM) 2013 is not met by running all three (3) Grant pumps. The booster station currently dedicated to Grant Park is next to a booster station used to feed Manteno. The two stations are able to back up or replace each other. By turning off valves, the current Manteno booster station's larger pumps can be dedicated to feeding Grant Park and UP through the 20" main, while the current Grant Park pumps would be dedicated to supplying Manteno.
3. From a "textbook" standpoint, the 24" pipeline at 5 fps has a 10 MGD capacity. In order to move those kinds of flows, additional facilities would be needed: either the existing 3 miles of 20" needs to be paralleled to eliminate the bottleneck, or a 3 mile extension out of the Manteno grid to the pipeline along with a companion booster station must be installed. Either of these actions "circumvents" the 20" bottleneck and allows what is essentially a 24" size "all the way" to provide 10 MGD. In reality, however,

operating a 17 mile pipeline at a 5 fps level can be a challenge in terms of surge and transient waves that are difficult to control despite BMPs. Therefore, a more realistic capacity is based on 3 fps in the 24", which correlates to 6.5 MGD. (Grant Booster disch = 157 psig)

Recommendations

1. The recommendation is that 3 fps be the governing boundary condition to operate such a long pipeline. With a 24" size, the capacity of that line is realistically 6.5 MGD.
2. In terms of just serving University Park using conservative annual growth numbers and relegating (capacity = 6.5 MGD) can meet UP 2040 peak day needs of 4.10 MGD.
3. A 30" size realistically allows Aqua to provide close to 10 MGD reliably.

Q. Based on your review of the Hydraulic Report do you agree with the Company's testimony regarding the capacity of the proposed pipeline?

A. Not entirely. With regards to existing and future average day demand I agree with the Company's position (based on Result No. 1) that it can continue to use existing pumping facilities to serve University Park, without additional costs for incremental pumping capabilities, through at least 2040. However,, the only scenario in the Hydraulic Report that discusses actually pumping 6.5 MGD is in Result No.1 for the 24-inch main which says new pumps would be required in the Grant Park station. It does not appear that the 24-inch Route 5A Pipeline project would be able to supply 6.5 MGD as implied by the Company since no pumping improvements are planned at this time. (Aqua Ex. 2.0 at 11-12:227-239.)

Result No. 2 in the Hydraulic Report states that the Manteno pumps could be switched over to supply University Park and Grant Park; however no corresponding hydraulic capability is given.

Recommendation No. 2 indicates that University Park's 2040 peak day need of 4.1 MGD can be met. However it does not indicate whether that is with the 24-inch main or the 30-inch main. In addition it doesn't indicate what pumps would be used.

In summary, Aqua has not stated the actual flowrate (in either MGD or gallons per minute) to University Park that can be provided from Diversatech pumps through the 24-inch Route 5A Pipeline. Also the proposed actual operational set up Diversatech pumps (which of the two pump stations would actually be used to service University Park) once the new pipeline is operational has not been provided. This makes it difficult to verify the Company's assertion regarding the capability to provide high quality softened water to University Park.

Q. Do you agree that the 24-inch Route 5A pipeline is the least-cost means of providing high quality softened water to its University Park Division customers?

A. While the Ion Exchange Treatment option would provide a firm capacity of 4.8 MGD of high quality softened water, its estimated cost of \$24.1 million is significantly more than that of the 24-inch Route 5A pipeline option

(approximately \$13 million). The resulting difference is \$8.4 million. The Company's testifies that the Route 5A option will meet the future University Park average daily demand through 2040. (Aqua Ex. 2.0 at 11-12:227-239) This demand is 1.7 MGD. (Aqua Ex. 2.3 at 5). While the Route 5A currently appears to initially provide capacity of 1.7 MGD, according to the Result 1 the Company can increase that capacity up to 6.5 MGD with the addition of new pumps. Based upon my past professional experience, the cost to replace the current pumps to increase the Route 5A pipeline should be much less than \$8.4 million. Also, the Route 5A pipeline option does leave the existing University Park wells in reserve, the Ion Exchange Treatment does not. While the existing well water is not of the pipeline's higher quality, it does provide a firm reserve capacity of up to 3.48 MGD which can be used for higher demand days. On this basis I consider the pipeline option to be least-cost.

CONCLUSION

Q. Does this conclude your prepared rebuttal testimony?

A. Yes.